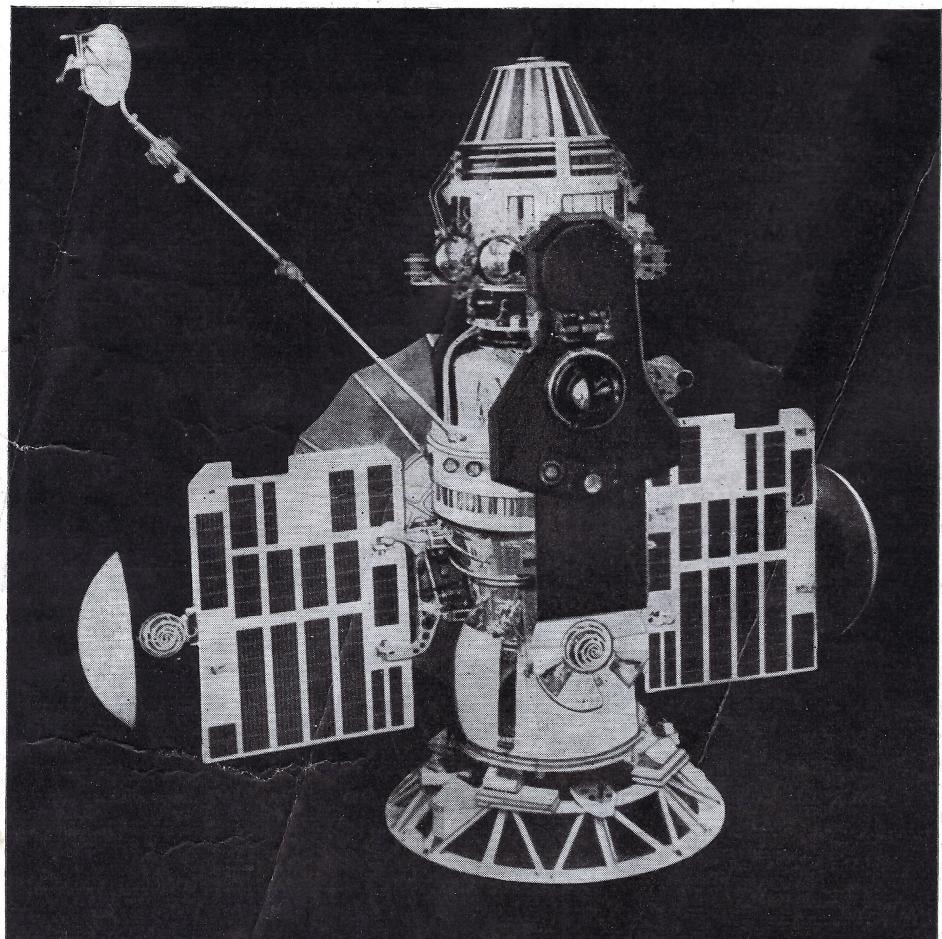




ACADEMY OF SCIENCES
OF THE USSR



AUTOMATIC INTERPLANETARY STATION
«VENERA-3»

The «Venera-3» automatic interplanetary station was launched on November 16, 1965. The main scientific task of the «Venera-3» automatic interplanetary station flight was to study the interplanetary space on the flight trajectory between the orbits of the Earth and the Venus and to study the nature of the Venus planet. The «Venera-3» automatic interplanetary station should have entered the dense layers of the planet's atmosphere and transmitted the results of direct measurements of temperature and pressure on the surface.

The station consists of two hermetically sealed sections — the orbital and the special one.

A landing device, made as a sphere with the diameter of 900 millimetres, is the special section of the «Venera-3» station. The sphere's surface is covered with a heat-resistant coat protecting it from high temperature during braking in the dense layers of the Venus atmosphere. The landing device houses transmitters of a decimetre wave band for transmitting to the Earth the basic parameters of the planet's atmosphere and surface, measured by the scientific instruments. The landing on the surface is carried out by means of a parachute system.

A pennant with the Coat of Arms of the Soviet Union is installed inside the landing device. The pennant is made like a hollow sphere, 70 millimetres in diameter, with contours of the Earth's continents engraved on its surface. Inside the sphere there is a medal displaying the Coat of Arms of the Soviet Union on one side and the coined planets of the solar system and the words «the Union of Soviet Socialist Republics, 1965» on the other side. The position of the Earth and the Venus on the medal corresponds to the time of the station's approach to the Venus.

The «Venera-3» probe was subjected to a thorough sterilization prior to launching. This was necessary to destroy microorganisms of the terrestrial origin and to prevent a possibility of their transportation to the Venus.

Thermocontrol system radiators, solar battery panels, propulsion system for the correction of the trajectory, and gas jet microengines of the orientation system are mounted on the outer surface of the orbital section.

The main instruments, ensuring the operation of the station on the trajectory, are in the orbital section. The orbital section also contains storage batteries, transmitters and receivers of a decimetre wave band, telemetric commutators, instruments of the system of orientation and correction of the station's flight, electronic and optical transducers of the station's position in space, and gyro instruments.

The definite heat condition which is necessary for the normal operation of the station's instruments is ensured by a thermocontrol system. The solar batteries, placed on two panels, are the basic power supply source for all the station's devices. Buffer batteries are connected to them in parallel.

The transmitter of the automatic space station operating in decimetre and centimetre wave band can be connected to a pencil-beam antenna which has the form of a paraboloid. Through this antenna the entire emitted power of the transmitter is directed towards the Earth in a narrow beam which improves considerably the reliability of radio communication and increases the speed and quality of information transmission.

The radio receiver of the interplanetary station receives commands, and also special radio signals from the Earth for measuring the distance between the station and the Earth and also the velo-

city with which the station leaves our planet.

The system of orientation and correction is one of the most important systems of the station. This system ensures the necessary orientation of the station in space at different stages of the flight.

The automatic station orientation system includes electronic and optical

transducers, gas-jet micro engines, the station's rotation velocity gyro meters, and control instruments.

On March 1, 1966, the landing device of the «Venera-3» Soviet automatic station reached the Venus for the first time in the world's history and delivered a pennant with the Coat of Arms of the Soviet Union to its surface.

